LISTING OF CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

1.   (Original)   A method of determining the removal of material(s) from a location, the method including the steps of calculating revenue, and determining a schedule with regard to grade constraints.

2.   (Original)   A method of determining the removal of material(s) from a location, the method including the steps of calculating revenue and determining a schedule with regard to impurity constraints.

3.   (Currently Amended)   ~~In combination, a method as claimed in claim 1 and 2~~ The method according to claim 1 further comprising determining a schedule with regard to impurity constraints.

4.   (Original)   A method of determining the removal of material(s) from a location for a mining operation, the method including the step of calculating a schedule, having regard to the expression:

(Revenue) $R = \Sigma (A . D . F) - \Sigma (C . D . E) - \Sigma (W . D . (E - F))$

where:

A denotes the revenue received from a unit volume of product

C is miring cost per block, clump and/or panel

D represents a variable discount for future values of $v_i(\omega)$, in that $v_i(\omega)$ denotes the 'value' (in today's dollars) of a block/clump/panel having a identification number i,

E is 1 if the block/clump/panel is excavated and 0 otherwise,

F is a fraction of a block considered to be ore, and

W is cost of waste.

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5.   (Original)   A method as claimed in claim 4, wherein fraction of block/clump and, or panel is calculated by expression:

(Revenue) $R = \Sigma (A . D . F) - \Sigma (C . D . G) - \Sigma (W . D . (G - F))$

where:

A denotes the revenue received from a unit volume of product

C is mining cost per block, clump and/or panel

D represents a variable discount for future values of $v_i(\omega)$, in that $v_i(\omega)$ denotes the 'value' (in today's dollars) of a block/dump/panel having a identification number i,

F is a fraction of a block considered to be ore,

G represents a portion of a block/clump/panel, and in where $0 \le G \le 1$ and $G \le E$, and E is 1 if the block/clump/panel is excavated and 0 otherwise, and

W is cost of waste.

6.   (Currently Amended)   Apparatus adapted to determine the removal of material from a location, said apparatus including processor means adapted to operate in accordance with a predetermined instruction set, said apparatus, in conjunction with said instruction set, being adapted to perform the method as claimed in ~~any one of claims 1 to 5~~ 1.

7.   (Currently Amended)   A block, clump and/or panel schedule established in accordance with the method as claimed in ~~any one of claims 1 to 5~~ 1.

8.   (Original)   A computer program product including a computer usable medium having computer readable program code and computer readable system code embodied on said medium for determining the removal of material from a location and operable within a data processing system, said computer program product including computer readable code within said computer usable medium for determining, at least in part, a schedule in accordance with claim 7.

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9.   (Currently Amended)   A computer program product including a computer usable medium having computer readable program code and computer readable system code embodied on said medium for determining the removal of material from a location and operable within a data processing system, said computer program product including computer readable code within said computer usable medium for determining the removal of material from a location, at least in part, in accordance with the method as claimed in ~~any one of claims 1 to 5~~ 1.

10.   (Currently Amended)   A method of determining the removal of material(s) of a differing relative value from a location, including

determining the approximate volume of material to be removed,

dividing the volume to be removed into at least two blocks,

attributing a relative value to each block,

~~the improvement including:~~

sorting each of the blocks according to its value,

listing each block and Its associated value in a table, irrespective of violation(s),

re-sorting the table listing to reduce violations.

11.   (Original)   A method of reducing violations in the removal of material(s) in blocks) of a differing relative value from a location, the method including:

selecting a block,

determining a cone corresponding to the selected block,

determining violations attributed to the cone,

determining a new position of the cone with reference to reduced violations.

12.   (Original)   A method of reducing violations in the removal of material(s) in blocks) of a differing relative value from a location, the method including:

selecting a block,

determining a cone corresponding to the selected block,

determining violations attributed to the cone, and

determining a new position of the cone with reference to Improved NPV.

13. (Currently Amended) ~~In combination, a method as claimed in claim 11 and 12~~ The method according to claim 11 further comprising determining a new position of the cone with reference to Improved NPV.

14. (Original) In the removal of material(s) in block(s) of a differing relative value from a location, a method of determining a new cone position in a stack, the method including:

determining a number of violations associated with a first cone position,

determining a number of violations associated with a second cone position,

the second cone position having less than or equal number of violations as the first cone position,

selecting as the new cons position, the second cone position.

15. (Original) A method as claimed in claim 14, wherein the second cone position is determined Iteratively.

16. (Original) A method as claimed in claim 14, wherein the second cone position is determined randomly.

17. (Original) A system for determining the removal of material(s) of a differing relative value from a location, including:

first means determining the approximate volume of material to be removed,

second means dividing the volume to be removed into at least two blocks,

third means attributing a relative value to each block,

the improvement including:

sorting means for sorting each of the blocks according to its value,

means for listing each block and its associated value in a table,

irrespective of violation(s), and

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re-sorting means for re sorting the table listing to reduce violations.

18. (Original)   A system for reducing violations in the removal of material(s) in block(s) of a differing relative value from an allocation, the system including:

selecting means for selecting a block,.

determining means for determining a cone corresponding to the selected block,

violation determining means for determining violations attributed to the cone, and

position determining means for determining a new position of the cone with reference to reduced violations.

19. (Original)   A system of reducing violations in the removal of materials) in blocks) of a differing relative value from a location, the system including:

block selecting means for selecting a block,

cone determining means for determining a cone corresponding to the selected block,

violation determining means for determining violations attributed to the cone,

position determining means for determining a new position of the cone with reference to improved NPV.

20. (Currently Amended)   ~~In combination, a system as claimed in claim 18 and 19~~ The method of claim 18 further comprising position determining means for determining a new position of the cone with reference to improved NPV.

21. (Original)   In the removal of material(s) in block(s) of a differing relative value from a location, a system for determining a new cone position in a stack, the system including:

means for determining a number of violations associated with a first cone position,

means for determining a number of violations associated with a second cone position, the second cone position having less than or an equal number of violations as the first cone position,

means for selecting as the new cone position, the second cone position.

22.   (Original)   A system, as claimed in claim 21, wherein the second cone position is determined iteratively.

23.   (Original)   A system as claimed in clam 21, wherein the second cone position is determined randomly.

24.   (Currently Amended)   A computer program product including:
        a computer usable medium having computer readable program code and
        computer readable system code embodied on said medium for determining the removal of material(s) of a differing relative value from a location, within a data processing system, said computer program product including:
        computer readable code within said computer usable medium for displaying determining the removal of material(s) of a differing relative value from a location in accordance with ~~anyone of claims 10 to 16~~ claim 10.

25.   (Original)   A method of determining the removal of material(s) from a location, including:
        selecting a value of risk,
        calculating a corresponding return, and
        determining a schedule corresponding to the risk and return.

26.   (Original)   A method as claimed in claim 25, wherein the return corresponds to NPV.

27.   (Currently Amended)   A method as claimed in claim 25 ~~or 26~~, wherein the risk corresponds to variance in NPV.

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28.   (Currently Amended)   A method as claimed in claim 26, 26 or 27, wherein
the return corresponds to the expression:

Return (NPV) = Σ av ($v_{i,t}(\omega)$) . D . E

where:

av ($v_{i,t}(\omega)$) is average block value,

D represents a variable discount for future values of $v_{i,t}(\omega)$, and

E is 1 if the block/clump/panel is excavated and 0 otherwise.

29.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 25 ~~to
28~~, wherein the risk corresponds to the expression:

Var(NPV) = F + G

where:

F is (variance in $v_{i,t}(w)$. D . E

G is (covariance in ($v_{i,t}$ $v_{l,3}$) . D . E

D represents a variable discount for future values of $v_{i,t}(w)$,and

E is 1 if the block/clump/panel is excavated and 0 otherwise.

30.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 26
<u>wherein the risk corresponds to variance in NPV</u> ~~25 to 29, substantially as herein
disclosed with reference to Figure 12 of the accompanying drawings~~.

31.   (Currently Amended)   A block, clump and/or panel schedule established in
accordance, at least in part, in accordance with the method as claimed in ~~any one of
claims~~ <u>claim</u> 25 ~~to 30~~.

32.   (Currently Amended)   Apparatus adapted to determining the removal of
materials) from a location, said apparatus including:

    processor means adapted to operate in accordance with a predetermined
instruction set,

said apparatus, in conjunction with said instruction set, being adapted to perform the method as claimed in ~~any one of claims~~ claim 25 ~~to 30~~.

33.   (Original)   A computer program product including:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for determining the removal of material(s) from a location within a data processing system, said computer program product including;

computer readable code within said computer usable medium for determining, at least in part, a schedule in accordance with claim 31.

34.   (Currently Amended)   A computer program product including:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for determining the removal of material(s) from a location within a data processing system, said computer program product including:

computer readable code within said computer usable medium for determining, at least in part, a method in accordance with ~~any one of claims~~ claim 25 ~~to 30~~.

35.   (Original)   A method of determining an aggregated block ordering for the extraction of material from a location, the method including the steps of:

from a block sequence in a raw form, clustering blocks according to:

spatial coordinates x, y and/or z, and

a further variable 'v'.

36.   (Original)   A method as claimed in claim 35, wherein variable 'v' is decreased in emphasis to provide clusters that are more closely related to the raw form.

37.   (Original)   A method as claimed in claim 35, wherein variable 'v' is increased in emphasis to provide clusters that are relatively spatially fragmented.

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38.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 35 ~~to~~ ~~37~~, wherein variable 'v' relates to any one of or any combination of time, value, grade, ore type.

39.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 35 ~~to~~ ~~38~~, wherein cluster size is controlled.

40.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 35 ~~to~~ ~~39~~, wherein cluster shape is controlled.

41.   (Original)   A method as claimed in claim 39, wherein controlling pushback size is facilitated by controlling size of the cluster.

42.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 35 ~~to~~ ~~41~~, further including the step of propagating the cluster(s) in a relatively time ordered way to produce pushbacks.

43.   (Original)   A method as claimed in claim 42, further including the steps of:
        after propagating to find pushbacks, valuing, and
        feeding back the value information to the choice of cluster parameters.

44.   (Currently Amended)   A mine designed in accordance with the method as claimed in ~~any one of claims~~ claim 35 ~~to 43~~.

45.   (Original)   Material extracted from a mine as claimed in claim 44.

46.   (Original)   Apparatus adapted to determining an aggregated block ordering for the extraction of material from a location, the apparatus including:
        first means for clustering blocks from a block sequence in a taw form, in accordance with:
        spatial coordinates x, y and x, and
        a further variable 'v'.

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47.   (Currently Amended)   Apparatus including processor means adapted to operate in accordance with a predetermined instruction set, said apparatus, in conjunction with the instruction set, being adapted to perform the method as claimed in ~~any one of claims~~ claim 35 ~~to 43~~.

48.   (Currently Amended)   A computer program product including:
        computer usable medium having computer readable program code and
        computer readable system code embodied on said medium for determining slope constraints related to a design configuration for extracting material from a particular location within a data processing system, said computer program product including:
        computer readable code within said computer usable medium for performing the method as claimed in ~~any one of claims~~ claim 35 ~~to 43~~.

49.   (Original)   A method of determining a mine design, the method including the steps of:
        determining a plurality of blocks in the mine,
        aggregating at least a portion of the blocks,
        providing a block sequence using an integer program, and refining the sequence according to predetermined criteria.

50.   (Original)   A method as claimed in claim 49, wherein the predetermined criteria relate to time and/or space of extraction.

51.   (Currently Amended)   A method as claimed in claim 49 ~~or 50~~, wherein the predetermined criteria is to propagate clusters to form pushbacks.

52.   (Currently Amended)   A method as claimed in claim 49, ~~50 or 51~~, wherein the predetermined criteria relates to reviewing the sequence for value and/or mineability.

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53.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 49 ~~to 52~~, wherein the predetermined criteria serves to adjust clustering parameters.

54.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 49 ~~to 53~~, wherein the aggregation is performed relative to spatial and/or value clustering.

55.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 49 ~~to 54~~, wherein the block sequence is provided relative to dump variables.

56.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 49 ~~to 55~~, wherein the refining of the sequence is conducted relative to secondary clustering, with a fourth coordinate.

57.   (Currently Amended)   A method as claimed in ~~any one of claims~~ claim 49 ~~to 56~~, further including the step of determining relative minimum mining width.

58.   (Currently Amended)   A mine designed in accordance with the method as claimed in ~~any one of claims~~ claim 49 ~~to 57~~.

59.   (Original)   Material extracted from a mine as claimed in claim 58.

60.   (Original)   Apparatus adapted to determine a mine design, the apparatus including:

   first means adapted to determine a plurality of blocks in the mine,

   second means adapted to aggregate at least a portion of the blocks,

   third means adapted to provide a block sequence using an integer program, and

   fourth means adapted to refine the sequence according to predetermined

criteria.

61.   (Currently Amended)   Apparatus including processor means adapted to operate in accordance with a predetermined instruction set,

said apparatus, in conjunction with the instruction set, being adapted to perform the method as claimed in ~~any one of claims~~ claim 49 ~~to 57~~.

62.   (Currently Amended)   A computer program product including:

computer usable medium having computer readable program code and computer readable system code embodied on sold medium for determining slope constraints related to a design configuration for extracting material from a particular location within a data processing system, said computer program product including:

computer readable code within said computer usable medium for performing the method as claimed in ~~any one of claims~~ claim 49 ~~to 57~~.

63.   (Canceled)   A method of determining a mine design substantially in accordance with Figure 13 as disclosed herein.

64.   (Original)   A method of determining a schedule for extraction of clump(s), the method including:

determining a period of time corresponding to at least a portion of the clump(s), and

assigning the period of time to the portion of clump(s).

65.   (Original)   A method as claimed in claim 64, wherein the steps are repeated for other portions) of clump(s).

66.   (Original)   A method as claimed in claim 64, wherein the portion is zero.

67.   (Currently Amended)   A method as claimed in claim 64, ~~65 or 66,~~ wherein the portion of clump(s) is assigned a period of time on the basis of predetermined attributes.

68.   (Currently Amended)   A method of determining an extraction order of block(s) from corresponding clump schedule, the method including:

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performing the method as claimed in ~~any one of claims~~ <u>claim</u> 64 ~~to 67~~,

determining which portion(s) of clumps) have been assigned the same period of time, and

joining together blocks located in the portions) having the same period of time.

69.   (Original)   A method as claimed in claim 68, wherein the order is determined by extracting blocks from an uppermost sequence of blocks through to a lower sequence of blocks.

70.   (Currently Amended)   A method as claimed in claim 68 ~~or 69~~, further including the step of refining the block order to improve NPV.

71.   (Original)   A method as claimed in claim 70, wherein the refining of NPV is initiated from the block sequence obtained from a dump schedule.

72.   (Currently Amended)   A mine designed in accordance with the method as claimed in ~~any one of claims~~ <u>claim</u> 64 ~~to 71~~.

73.   (Original)   Material extracted from a mine in accordance with the design as claimed in claim 72.

74.   (Currently Amended)   Material extracted from a mine in accordance with the method as claimed in ~~any one of claims~~ <u>claim</u> 64 ~~to 71~~.

75.   (Currently Amended) A computer program product including:
computer usable medium having computer readable program code and
computer readable system code embodied on said medium for determining slope
constraints related to a design configuration for extracting material from a particular location within a data processing system, said computer program product including:

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computer readable code within said computer usable medium for performing the method as claimed in ~~any one of claims~~ claim 64 ~~to 71~~.

76.   (Original)   Apparatus adapted to determining a schedule for extraction of clump(s), the apparatus including:

first means for determining a period of time corresponding to at least a portion of the clump(s), and

second means for assigning the period of time to the portion of clump(s).

77.   (Currently Amended)   Apparatus adapted to determining an extraction order of block(s) from corresponding dump schedule, the apparatus including:

first means for performing the method as claimed in ~~any one of claims~~ claim 64 ~~to 67~~,

second means for determining which portions) of clump(s) have been assigned the same period of time, and

third means for joining together blocks located in the portion(s) having the same period of time.

78.   (Currently Amended)   Apparatus including a processor means adapted to operate in accordance with a predetermined instruction set,

said apparatus, in conjunction with said instruction set, being adapted to perform the method as claimed in ~~any one of claims~~ claim 64 ~~to 71~~.

79.   (Canceled)   A method as claimed in any one of claims 1 to 5, 10 to 16, 25 to 30, 35 to 43, 45 to 57 and 84 to 71, substantially as herein described with reference to the accompanying drawings.

80.   (Canceled)   Apparatus as claimed in claim 6, 32, 46, 47, 60, 81 or 76 to 78, substantially as herein described with reference to the accompanying drawings.

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81.   (Canceled)   A system as claimed in any one of claims 17 to 23, substantially as herein described with reference to the accompanying drawings.